
Suisun Marsh Monitoring Program Channel Water Salinity Report

Reporting Period: October 2002

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SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

The California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. This requirement is based on SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions. Channel water salinity conditions in the Suisun Marsh are determined by monitoring specific electrical conductivity. Specific electrical conductivity is referred to in the reports as "specific conductance".

The locations of all listed stations are shown in Figure 5.

The monthly reports are submitted for October through May each year in accordance with SWRCB requirements. The reports are required to include salinity data from the stations listed below:

Station Identification	Station Name	General Location	Status
C-2*	Collinsville	Western Delta	Compliance Station
S-64	National Steel	Eastern Suisun Marsh	Compliance Station
S-49	Beldon's Landing	North-Central Suisun Marsh	Compliance Station
S-42	Volanti	North-Western Suisun Marsh	Compliance Station
S-21	Sunrise	North-Western Suisun Marsh	Compliance Station

*Throughout this report, the representative data from nearby USBR station is used in lieu of data from station C-2.

Data from the stations listed below are included in the monthly reports to provide information on salinity conditions in the western Suisun Marsh.

Station Identification	Station Name	General Location	Status
S-97	Ibis	Western Suisun Marsh	Monitoring Station
S-35	Morrow Island	South-Western Suisun Marsh	Monitoring Station

Information on Delta outflow, area rainfall, and operation of the Suisun Marsh Salinity Control Gates are included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

RESULTS

Channel Water Salinity Compliance

State Water Resources Control Board channel water salinity standards for the Suisun Marsh were met at all five compliance stations during October 2002 (Table 1). Compliance with channel water salinity standards was determined for each compliance station by comparing October mean high-tide specific conductance (SC) with their respective standards. The standard for all compliance stations (i.e. C-2, S-64, S-49, S-42, S-21) during October 2002 was 19.0 millisiemens per centimeter (mS/cm). Table 1 lists monthly mean high-tide SC at the compliance stations.

The progressive monthly mean SC for each station is used to track salinity conditions during each month (Figures 1). The progressive mean is calculated for each compliance station. The progressive daily mean (PDM) is the mean of daily average high-tide SC of the month. The mathematical equation is shown below. New progressive mean calculations begin at the start of each calendar month.

$$\text{PDM} = \frac{\sum \text{daily average of high tide SC}}{\text{\# days of the month}}$$

Delta Outflow

Low Delta outflow occurred in October 2002 (Figure 3). The monthly mean Net Delta Outflow Index (NDOI) for October is listed below:

Month	Mean NDOI (cubic feet per second)
October	4,097

The NDOI is the estimated average daily rate of outflow from the Delta.

Rainfall

Total monthly rainfall at the Waterman Gauging Station in Fairfield during October 2002 is listed below:

Month	Total Rainfall (inches)
October	0.00

Suisun Marsh Salinity Control Gate (SMSCG) Operations

Operations and flashboard/boat lock installations at the SMSCG during October 2002 is summarized below.

Date	Gate status	Flashboards status	Boat lock status
October 1 – 8	Operating	Installed	Closed
October 9 – 22	Held Open	Installed	Closed
October 23 – 31	Operating	Installed	Open

October SMSCG operations included a fish study this year. This year fish passage study included ONLY boat lock modifications, not flashboards. The boat lock gates were tested under the closed (phases 1 and 2) and open (phase 3) modes in conjunction with either gate or no gate operations as summarized in the above table.

DISCUSSION

Factors Affecting Channel Water Salinity in the Suisun Marsh

Factors that affect channel water salinity levels in the Suisun Marsh include:

- delta outflow;
- tidal exchange;
- rainfall and local creek inflow;
- managed wetland operations; and,
- operation of the SMSCG and flashboard configurations.

Observations and Trends

Conditions during the Reporting Period

Salinity levels at all compliance stations ranged between 6 mS/cm and 15 mS/cm at the start of October (Figure 1). However, the two monitoring stations started about 17.5 mS/cm (Figure 2). Despite low Delta outflow during October and prior month, all compliance and monitoring stations salinity levels were below October standard of 19.0 mS/cm and therefore all stations were in compliance. Channel water salinity conditions in the Marsh were mostly driven by SMSCG operations during October 2002. Salinity levels at the early half of October were low due to gate operations. However, it appears that when gate operations stopped in the middle of October, salinity level began to inch upward at all marsh stations. Salinity levels were then suppressed in the later part of October when gate operation resumed. October 2002 SMSCG operations were operated in support of the fish passage study schedule shown above.

Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for October 2002 were compared with means for those months during the previous nine years (Figure 4).

Means at all compliance and monitoring stations for October 2002 were similar to that of October 1997, and end of month salinity levels at all stations were lower than other previous years conditions.

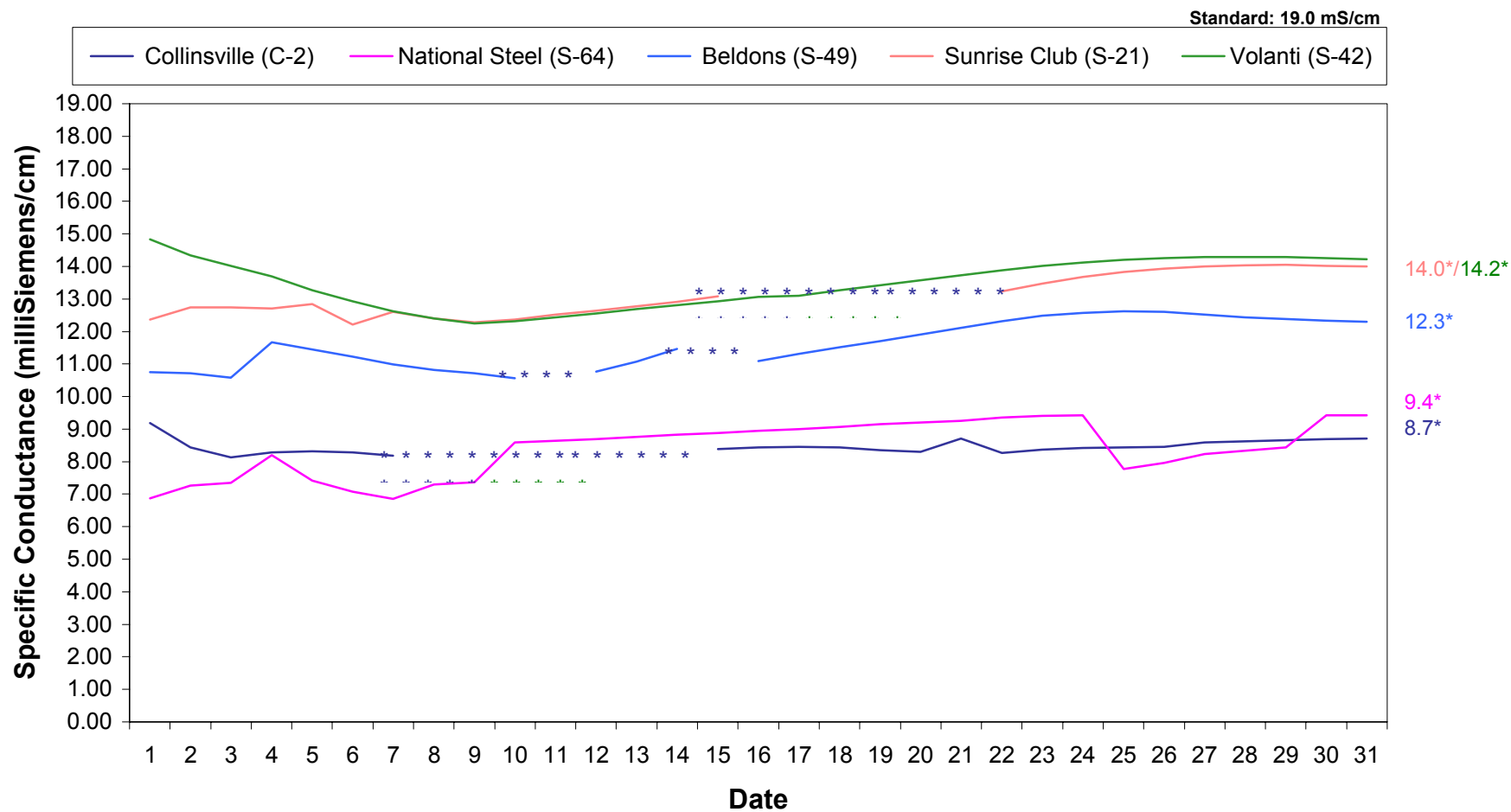
Table 1**Monthly Mean High Tide Specific Conductance at Suisun Marsh
Water Quality Compliance Stations****October 2002**

Station	Specific Conductance (mS/cm)*	Standard	Standard meet?
C-2**	8.7	19.0	Yes
S-64	9.4	19.0	Yes
S-49	12.3	19.0	Yes
S-42	14.2	19.0	Yes
S-21	14.0	19.0	Yes

* = milliSiemens per centimeter

**The representative data from nearby USBR station is used in lieu of data from station C-2.

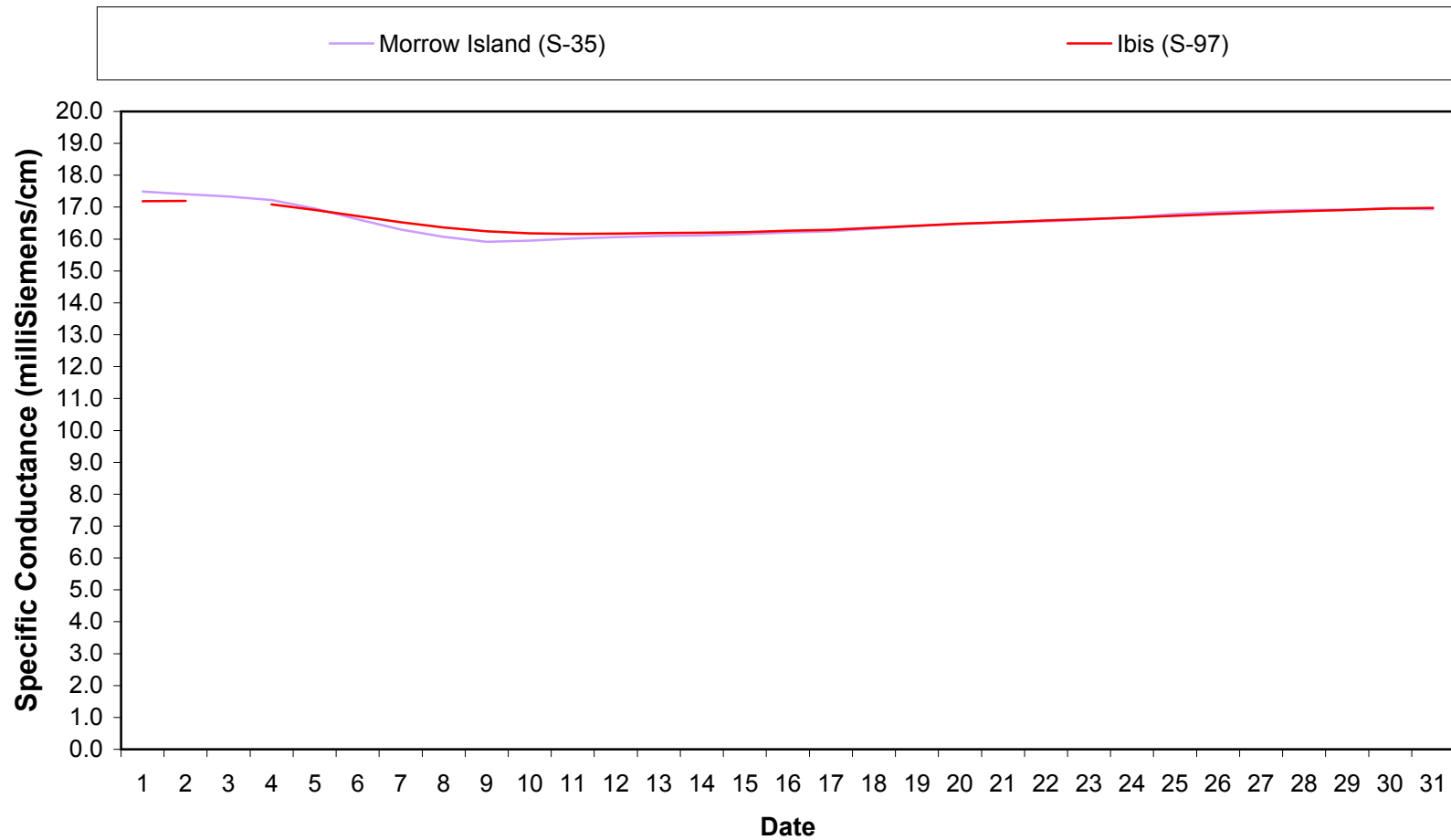
Figure 1. Suisun Marsh Progressive Mean High Tide Specific Conductance for October 2002



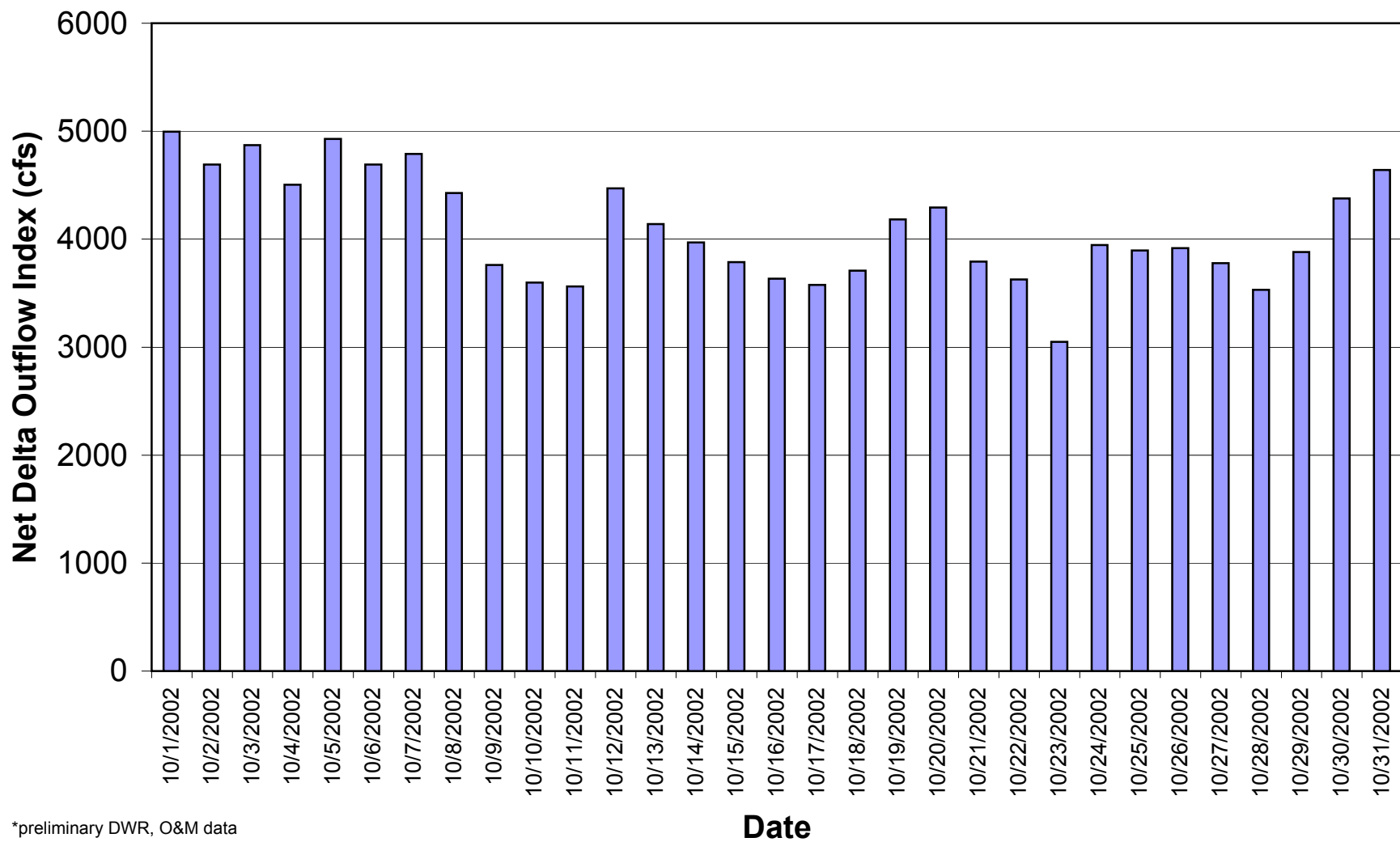
* = monthly mean specific conductance at high tide.

*****Data not available.

**Figure 2. Suisun Marsh Progressive Mean High-Tide Specific Conductance
at Monitoring Stations S-35 and S-97
October 2002**



**Figure 3. Daily Net Delta Outflow Index For
October 2002***



**Figure 4. Monthly Mean Specific Conductance at High Tide:
Comparison of Monthly Values for Selected Stations
October 1993-2002**

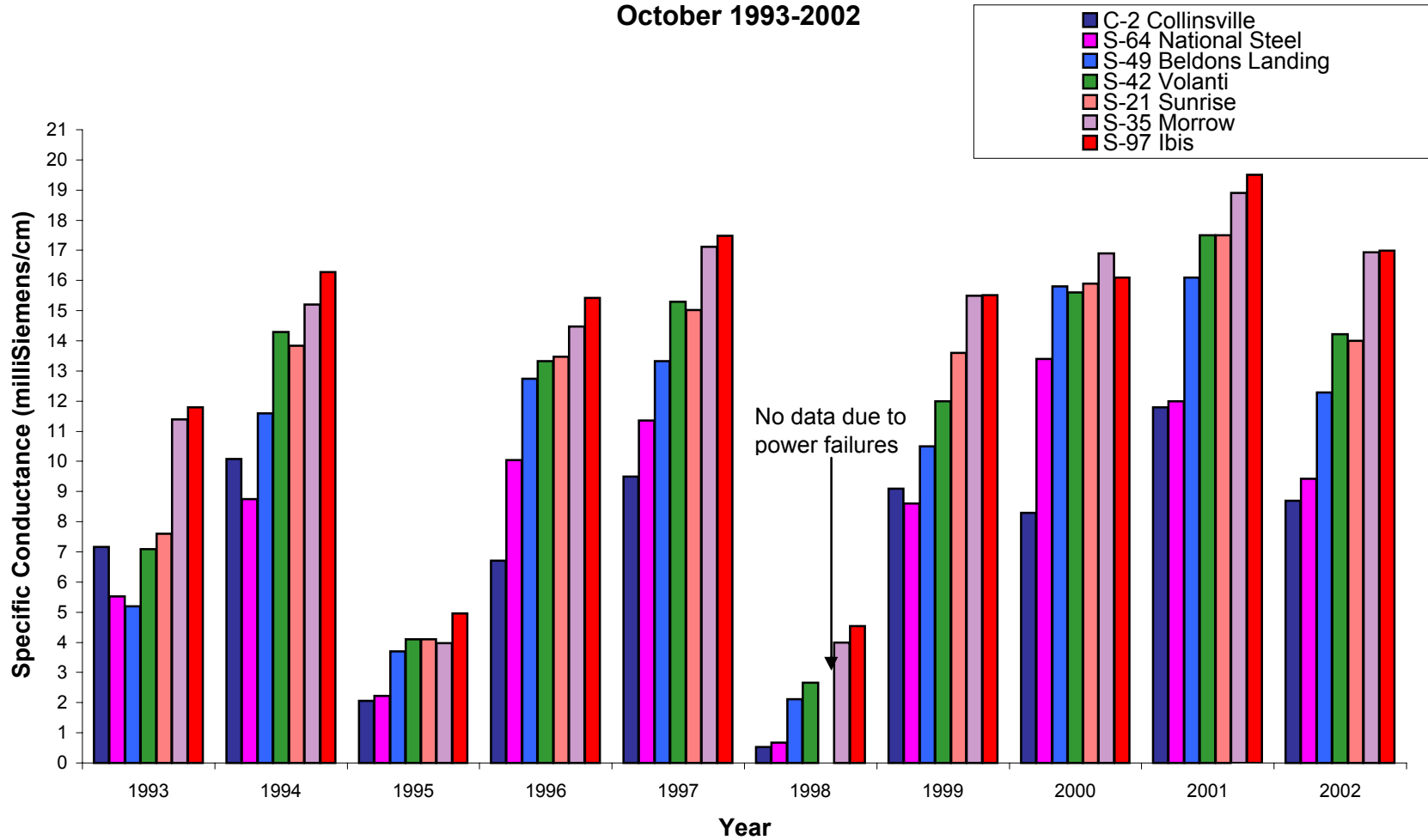


Figure 5

